# THE JOURNAL OF PHYSIOLOGY

EDITED FOR

## THE PHYSIOLOGICAL SOCIETY

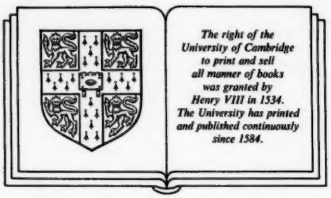
BY

D. G. ALLEN W. ALMERS D. M. ARMSTRONG
D. BARTLETT T. B. BOLTON W. F. BORON
M. W. B. BRADBURY A. G. BROWN D. A. BROWN
E. CARMELIET N. W. DAW M. DE BURGH DALY
G. J. DOCKRAY R. FETTIPLACE Y. E. GOLDMAN
R. F. HELLON BERNARD KATZ W. R. KEATINGE
P. A. KIRKWOOD H. W. KOSTERLITZ T. D. LAMB
P. LENNIE V. L. LEW C. J. LOTE E. NEHER
M. I. M. NOBLE DALE PURVES D. W. RICHTER
N. B. STANDEN ANNE E. WARNER S. WEIDMANN
C. A. R. BOYD, T. J. RINK & P. R. STANFIELD
(*Distributing Editors*)
A. V. EDWARDS (*Secretary*) E. S. PETERSEN (*Chairman*)

Volume 371
1986

CAMBRIDGE UNIVERSITY PRESS
CAMBRIDGE
LONDON NEW YORK NEW ROCHELLE
MELBOURNE SYDNEY

Published by the Press Syndicate of the University of Cambridge
The Pitt Building, Trumpington Street, Cambridge CB2 1RP
32 East 57th Street, New York, NY 10022, USA
10 Stamford Road, Oakleigh, Melbourne 3166, Australia




© The Physiological Society 1986

JPHYA 7 371 1–433 (1986)
ISSN 0022 3751

Printed in Great Britain by the
University Press, Cambridge

# CONTENTS OF VOLUME 371

*February* 1986

ŠTULC J. & ŠTULCOVÁ B. Transport of calcium by the placenta of the rat. 1

BERNARD Christian, FERRARY Evelyne & STERKERS Olivier Production of endolymph in the semicircular canal of the frog *Rana esculenta*. 17

BANI-SACCHI Tatiana, BARATTINI M., BIANCHI S., BLANDINA P., BRUNELLESCHI Sandra, FANTOZZI R., MANNAIONI P.F. & MASINI Emanuela The release of histamine by parasympathetic stimulation in guinea-pig auricle and rat ileum. 29

BENHAM C.D., BOLTON T.B., LANG R.J. & TAKEWAKI T. Calcium-activated potassium channels in single smooth muscle cells of rabbit jejunum and guinea-pig mesenteric artery. 45

ENRIGHT J.T. Facilitation of vergence changes by saccades: influences of misfocused images and of disparity stimuli in man. 69

CHAN C.Y. & NICHOLSON C. Modulation by applied electric fields of Purkinje and stellate cell activity in the isolated turtle cerebellum. 89

BAYLOR D.A. & NUNN B.J. Electrical properties of the light-sensitive conductance of rods of the salamander *Ambystoma tigrinum*. 115

HARRISON P.J., JANKOWSKA E. & ZYTNICKI D. Lamina VIII interneurones interposed in crossed reflex pathways in the cat. 147

PÉCOT-DECHAVASSINE Monique Increase in polyneuronal innervation in frog muscle after muscle injury. 167

PUBLICOVER Nelson G. & SANDERS Kenton M. Effects of frequency on the wave form of propagated slow waves in canine gastric antral muscle. 179

MAIER L., PETTE D. & RATHMAYER W. Enzyme activities in single electrophysiologically identified crab muscle fibres. 191

CARMELIET E. & MUBAGWA K. Changes by acetylcholine of membrane currents in rabbit cardiac Purkinje fibres. 201

CARMELIET E. & MUBAGWA K. Characterization of the acetylcholine-induced potassium current in rabbit cardiac Purkinje fibres. 219

CARMELIET E. & MUBAGWA K. Desensitization of the acetylcholine-induced increase of potassium conductance in rabbit cardiac Purkinje fibres. 239

MEKATA F. The role of hyperpolarization in the relaxation of smooth muscle of monkey coronary artery. 257

ARTHUR S.K. & GREEN R. Fluid reabsorption by the proximal convoluted tubule of the kidney in lactating rats. 267

ORDWAY George A. & PITETTI Kenneth H. Stimulation of pulmonary C fibres decreases coronary arterial resistance in dogs. 277

HIRST G.D.S., SILVERBERG G.D. & VAN HELDEN D.F. The action potential and underlying ionic currents in proximal rat middle cerebral arterioles. 289

HILL Caryl E., HIRST G.D.S., SILVERBERG G.D. & VAN HELDEN D.F. Sympathetic innervation and excitability of arterioles originating from the rat middle cerebral artery. 305

GRANT Kirsty & HORCHOLLE-BOSSAVIT Ginette Red nucleus inputs to retractor bulbi motoneurones in the cat. 317

BAUMANN K.I., HAMANN W. & LEUNG M.S. Mechanical properties of skin and responsiveness of slowly adapting type I mechanoreceptors in rats at different ages. 329

BAUMANN K.I., CHENG-CHEW S.B., HAMANN W. & LEUNG M.S. Responsiveness and ultrastructure of slowly adapting type I cutaneous mechanoreceptors in vitamin A deficient rats. 339

BRUNS Wolfgang, DERMIETZEL Rolf & GROS Gerolf Carbonic anhydrase in the sarcoplasmic reticulum of rabbit skeletal muscle. 351

HESS R.F. & NORDBY K. Spatial and temporal limits of vision in the achromat. 365

HESS R.F. & NORDBY K. Spatial and temporal properties of human rod vision in the achromat. 387

CHABALA Lee D., GURNEY Alison M. & LESTER Henry A. Dose–response of acetylcholine receptor channels opened by a flash-activated agonist in voltage-clamped rat myoballs. 407

PROCEEDINGS OF THE PHYSIOLOGICAL SOCIETY

12–14 *September* 1985

*Cambridge Meeting*

DEMONSTRATIONS

*Ellis Susan T., Heap R.B., Paris Frances, Stanley C.J. & Webb Anne E.* A rapid enzyme-amplified immunoassay for progesterone in bovine milk using a monoclonal antibody. 2*P*

*Buss T., Evans M.H. & Head F.C.* A respiratory valve unit for open-circuit anaesthesia of small animals. 3*P*

*Bicknell R.J., Leng G. & Russell J.A.* A model system for the study of morphine dependence and withdrawal in identified peptidergic neurones in the rat. 4*P*

*Ellendorff F. & Grossmann R.* A stereotaxic procedure for recording the electrical activity of neurones in chicken brains during the perinatal period. 5*P*

*Bicknell R.J., Ingram C.D. & Mason W.T.* Techniques for recording electrical activity of normal bovine pituitary lactotrophs. 6*P*

*Harrison F.A., Osborne J.E. & Ryder C.M.* An automatic feeder for sheep. 7*P*

*Dauncey M.J., Ingram D.L., Osborne J.E. & Toner J.N.* Radiotelemetry of deep body temperature from one piglet within a group. 8*P*

*Baldwin B.A., Heavens R.P., Kendrick K.M., Parrott R.F., Sharman D.F. & Thornton S.N.* A method of withdrawal of c.s.f. or infusion of substances into the lateral cerebral ventricles of conscious pigs and sheep. 9*P*

*Baldwin B.A. & Kendrick K.M.* A method for recording single-unit neuronal activity in conscious sheep. 10*P*

*Baldwin B.A., Cooper T.R., Heavens R.P., Kendrick K.M. & Sharman D.F.* A method for neurochemical sampling, using intracranial dialysis, in the conscious sheep. 11*P*

*Cooper T.R. & Sharman D.F.* A fluorimetric method for the estimation of acetylcholinesterase activity in small volumes of cerebrospinal fluid using acetylcholine as substrate. 12*P*

*Quayle J.M., Smith R.A.J. & Ward T.A.* A low-cost system for on-line pulse generation, patch-clamp current sampling and analysis. 13*P*

*Ryall R.W.* On-line acquisition, analysis, display and storage of analogue or digital electrophysiological data with the BBC microcomputer. 14*P*

*Grønnerød O. & Vøllestad N.K.* Quantitative analysis of histochemically stained sections of mammalian muscle. 15*P*

*Garthwaite J.* Parallel-fibre- and mossy-fibre-mediated synaptic transmission in rat cerebellar slices monitored using a 'grease-gap' method. 16*P*

*Bowser-Riley F. & Price D.J.* A remotely controlled revolving injection apparatus to investigate the actions of anaesthetic agents under hyperbaric conditions. 17*P*

*Art J.J., Crawford A.C. & Fettiplace R.* A method for measuring cellular movements less than the wavelength of light. 18*P*

*Datta A.K., Baker Jean R. & Stephens J.A.* A new technique to assess the ongoing short-term synchronization in individual motor units during different voluntary movements in man. 19*P*

*Ellory J.C., Freeman C.J. & Hall A.C.* Irradiation of cryopreserved red cells for membrane transport studies. 20*P*

*Bagust J.* A communication system for the disabled using the electro-oculogram and the BBC microcomputer. 21*P*

*Gardner-Medwin A.R.* Device to prevent vehicle drivers falling asleep 22*P*

*Gardner-Medwin A.R. & Rastegar K.* Independent binocular displays on a microcomputer screen. 23*P*

*Thomas R.C.* Eccentric double micropipette suitable both for $pH_i$ micro-electrodes and for intracellular iontophoresis. 24*P*

*Romaya J. & Zeki S.* Rotatable, three-dimensional computer reconstruction of the macaque monkey brain. 25*P*

*Fleet I.R., Hamon Maureen & Heap R.B.* Role of uterine lymphatics in the countercurrent transfer of prostaglandin $F_{2a}$ from the uterus to the ovary in the sheep. 26*P*

*Davis A.J. & Fleet I.R.* Cardiovascular responses to exogenous growth hormone in the conscious sheep 26*P*

*Cross B.A., Poulain D.A., Theodosis Dennise T. & Vincent J.D.* A videotape for teaching the principles of the milk-ejection reflex. 26*P*

*Bicknell R.J., Diez-Guerra F.J., Dyer R.G., Emson P.C. & Penny Jacqueline C.* Catecholamine release from isolated hypothalamic nuclei of the rat. 26*P*

*Leng G. & Russell J.A.* Release of oxytocin by stimulation in the anteroventral region of the third ventricle in the rat. 26*P*

*Dyer R.G. & Hollingsworth Sharon* Effect of naloxone on the response of identified rat preoptic neurones to electrical stimulation of the ventral noradrenergic tract. 26*P*

*Sirinathsinghji D.J.S.* Analysis of striatal dopamine concentrations in freely moving rats subjected to lesions of nigro-striatal tract. 26*P*

*Dempster J. & Mason W.T.* Semi-automated computer analysis of single ion channel recordings. 26*P*

*Dyball R.E.J. & Mason W.T.* Patch-clamp recordings of stimulus-related ion channel activity in nerve terminals of the rat neurohypophysis. 27*P*

*Sayers A.J. & Tregear R.T.* An apparatus to study the mechanics of muscle fibres at temperatures below 0 °C. 27*P*

*Miller N.G.A., Roser B.J., Stephenson S. Paula & Trenear J.S.* The use of new fluorochromes for identifying suppressor T cells in tolerance to tissue transplants. 27*P*

*Coleman G.S. & Munn E.A.* Cell-cell recognition in the selection of prey by the rumen ciliate *Polyplastron*. 27*P*

*Carleton J.S., Catt J. & Harrison F. Lynne* Bone-marrow cultures as a model differentiating system. 27*P*

*Titchen D.A. & Wood A.K.W.* Pharyngeal and associated reactions in sheep during regurgitation. 27*P*

## COMMUNICATIONS

*Laurent G.J., Oliver M.H. & Turner Jill E.* Biochemical changes in the right ventricle resulting from bleomycin-induced lung fibrosis in the rabbit: a model of cardiac hypertrophy. 28*P*

*Ashmore J.F. & Meech R.W.* Three distinct potassium channels in outer hair cells isolated from the guinea-pig cochlea. 29*P*

*Harris L.R.* The effect of opposing canal and otolith signals during off-vertical-axis rotation in the cat. 30*P*

*Fuchs P.A. & Mann A.C.* Voltage oscillations and ionic currents in hair cells isolated from the apex of the chick's cochlea. 31*P*

*Patuzzi R.B.* A model of the generation of the cochlear microphonic with nonlinear hair cell transduction and nonlinear basilar membrane vibration. 32*P*

*Stavenga D.G. & Tinbergen J.* Light-dependence of mitochondrial activity and pupillary pigment migration in blowfly photoreceptors. 33*P*

*Baumann C., Nöll G.N. & Schmidt K.-F.* Slow changes of the membrane potential and photoresponses of isolated frog retinal rods investigated by the whole-cell patch clamp technique. 34*P*

*Attwell David, Brew Helen, Gray Peter & Mobbs Peter* Single potassium channels in Müller cells of the salamander retina. 35*P*

*Cervetto L., McNaughton P.A. & Nunn B.J.* Aequorin signals from isolated salamander rods. 36*P*

*Hodgkin A.L., McNaughton P.A. & Nunn B.J.* Modulation of ionic current by light in salamander rods. 37*P*

*Rowe J.S.* GABA depolarizes horizontal cells in goldfish retina perfused with low calcium. 38*P*

*Attwell D., Mobbs Peter, Tessier-Lavigne M. & Wilson M.* Noise changes associated with the action of glutamate on retinal bipolar cells from the salamander (*Ambystoma mexicanum*). 39*P*

*Kay R.H.* Human detectability of simple non-sinusoidal frequency modulations (FM) and amplitude modulations (AM) of sounds. 40*P*

*Anderson J., Gabbott P., Martin K. & Whitteridge D.* The function and intracortical connectivity of a Meynert cell in area 17 of the cat visual cortex. 41*P*

*Lynch R.C.J. & Sillito A.M.* Binocular excitatory input to Y cells in lamina C of the cat dorsal lateral geniculate nucleus (dLGN). 42*P*

*Amassian V.E. & Eberle L.* Muscle spindle projections to feline thalamic neurones identified by local arterial injection of succinylcholine. 43*P*

*Salt T.E.* *N*-methylaspartate receptors and synaptic excitation in the rat ventrobasal thalamus. 44*P*

*Angel A. & Pollard C.E.* Cortical evoked responses during changes in electrocortical activity in the rat. 45*P*

*Lemon R.N., Mantel G.W.H. & Muir R.B.* The consequences of synchronization among cortico-motor neurones in the monkey. 46*P*

*Gibson A.R., Harvey C.F., Houk J.C., Kennedy P.R. & Van Kan P.L.E.* Significance of cortical input to the monkey red nucleus. 47*P*

*Abrahams V.C. & Clinton R.J.* Unit responses in the superior colliculus of the chloralose-anaesthetized cat: projections from vibration-sensitive receptors. 48*P*

*Mellanby J.H. & Sundstrom L.* Long-term reduction in excitability of rat dentate granule cells after tetanus toxin. 49*P*

*Dreifuss J.J., Raggenbass M. & Wuarin J.-P.* Tachykinins excite non-pyramidal neurones in rat hippocampus. 50*P*

*Headley P.M., Nicolopoulos S., Parsons C.G., West D.C. & Wik-Lund L.* Evidence that an amino acid is an excitatory transmitter of the projection from periaqueductal grey to raphe magnus in the rat. 51*P*

*Rees H. & Roberts M.H.T.* The effects of pretectal stimulation on the responsiveness of spinal dorsal horn neurones in the rat. 52*P*

*Cole J.D., Philip H.I. & Sedgwick E.M.* An effect of unilateral frontoparietal cortical lesions on ipsilateral as well as contralateral digit tremor in man. 53*P*

*Bigland-Ritchie B., Cafarelli E.J., Johansson R.S. & Woods J.J.* Human E.m.g. and motoneurone discharge rates during sustained submaximal contractions. 54*P*

*Burns S., Brown H., Goodwin J. & Kaiser W.C.* Shoulder stabilization, the spinal accessory nerve and the trapezius muscle in man. 55*P*

*Edgley S.A. & Gallimore C.M.* Morphology of dorsal horn spinocerebellar tract neurones in the cat. 56*P*

*Edgley S.A. & Jankowska E.* Functional properties of dorsal horn spinocerebellar tract neurones in the cat. 57*P*

*Blackshaw Susanna E. & Thompson S.W.N.* Hyperpolarizing responses to stretch in neurones innervating body wall muscle in the leech. 58*P*

*Lawson S.N. & Waddell P.J.* The antibody RT97 distinguishes between sensory cell bodies with myelinated and unmyelinated peripheral processes in the rat. 59*P*

*Anderson Shelagh, Birch P. & Fillenz Marianne* The role of presynaptic receptors in neuronal plasticity in the rat. 60*P*

*Lande S., Lang B., Newsom-Davis J. & Wray D.* Site of action of Lambert-Eaton myasthenic syndrome antibodies at mouse motor nerve terminals. 61*P*

*Halank M., Kilbinger H. & Wessler I.* Facilitation by nicotinic autoreceptors of acetylcholine release from the rat phrenic nerve. 62*P*

*Scholfield C.N.* Evidence for adenosine blockade of synpatic transmission by enhancement of presynaptic K conductance in guinea-pig brain slices. 63*P*

*Halsey M.J., Hawley Diane, Meldrum B.S. & Wardley-Smith Bridget* The effect of kynurenic acid on the high-pressure neurological syndrome in the rat. 64*P*

*Foëx P., Le Winter M. & Way B.* The end-ejection pressure-length relationship: hysteresis after acute increases in afterload in the intact canine heart. 65*P*

*Ardell J.L., Geis G.S., Randall W.C. & Wurster R.D.* Selective innervation of sinoatrial and atrioventricular nodes in the canine heart. 66*P*

*Greenwald S.E., Lever M.J., MacIntyre I., Morris H.R. & Tippins J.R.* The effect of human calcitonin gene-related peptide (CGRP) on the pig coronary circulation. 67*P*

*van Beek J.H.G.M. & Elzinga G.* Extravascular shunting of oxygen in the isolated saline-perfused rabbit heart. 68*P*

*Butler P.J., Stephenson R. & Woakes A.J.* Variability of the heart rate response during voluntary diving in the tufted duck, *Aythya fuligula*. 69P

*Greenleaf J.E. & Harrison M.H.* Changes in peripheral haematocrit and haemoglobin during water immersion in man. 70P

*Gabbott G.R.J. & Jones D.R.* Psychogenic influences on the cardiac response of the duck (*Anas platyrhynchos*) to forced submersion. 71P

*Kong C.H. & Thompson F.D.* Cardiovascular responses to postural stress in patients with chronic renal failure. 72P

*Bolam P.G., Imms F.J., Lee Wen-Sen, Ludlow P.G. & Parfett Greta* Blood flow following occlusion of the circulation to the human forearm. 73P

*Michel C.C. & Moyses C.* Fluid filtration into the feet of human subjects during quiet sitting. 74P

*Hargreaves S.P. & Marshall Janice M.* Cardiovascular responses evoked by systemic hypercapnia in the rat. 75P

*Penney D.G.* Early cardiovascular stress irreversibly alters heart structure and function in the rat. 76P

*Conway J., Sleight P. & Somers V.K.* The effect of sleep and physical training on heart period in man. 77P

*Coffman J.R., DeBowes R.M., Erickson H.H., Sexton W.L. & Sigler D.H.* Effects of training on cardiovascular function in the American Quarter horse. 78P

*Williams C.A.* The effects of adrenergic blockers and clonidine on the changes in blood pressure during muscle contractions in the cat. 79P

*Clower B.R., Douglas B.H., Haining J.L. & Smith R.R.* Role of blood platelets in cerebral haemorrhagic arteriopathy in the cat. 80P

*Baker S.P. & Posner P.* Cardiac effects of chronic ethanol ingestion in the ageing rat. 81P

*Breuhaus B.A., Chimoskey J.E., Saneii H.H., Sparks H.V. & Wangler R.D.* Synthetic (23-amino acid) atrial natriuretic peptide lowers cardiac output in conscious sheep and constricts coronary arteries in isolated guinea-pig hearts. 82P

*Dabney J.M. & Dobbins D.E.* Perfused pre-nodal lymphatic vessels in the canine forelimb constrict in response to dopamine. 83P

*Frøkjaer-Jensen J. & Reese T.S.* Three-dimensional organization of the plasmalemmal vesicular system in directly frozen, freeze-substituted frog mesenteric capillaries. 84P

*Caro C.G., Jay M. & Lever M.J.* Labelled albumin uptake by rabbit aorta, pulmonary artery and common carotid artery. 85P

*Hudlicka O. & Price S.* The effect of long-term electrical stimulation on capillary density, blood flow and muscle performance in rat fast muscles with limited blood supply. 86P

*Dejours P.* Effect of ambient chloride concentration changes in the haemolymph acid-base balance of the crayfish, *Procambarus clarkii*, exposed to various environmental conditions. 87P

*Cotter T., Finn Martha, Gebruers Elizabeth M. & Hall W.J.* Changes in plasma volume and vasopressin in humans drinking fluids isosmotic with plasma. 88P

*O'Callaghan P.A. & Sheehan J.D.* Vasopressin and baroreflex sensitivity in man. 89P

*Brooks D.P., Crofton Joan T. & Share L.* The metabolic clearance rate for vasopressin and the pressor responsiveness to vasopressin in conscious male and female rats. 90P

*Ebert T.J., Eckberg D.L. & Sprenkle J.M.* The importance of neural-cardiac regulation in the control of blood pressure during vasopressin infusions in man. 91P

*Brooks D.P., Crofton Joan T. & Share L.* The role of brain prostaglandins in osmotic-induced vasopressin secretion in the rat. 92P

*Bennett T., Foulkes R. & Gardiner S.M.* Daily variations in B.P. during adrenal regeneration in rats. 93P

*Noble A.R. & Parker Jane C.* Effect of $\beta$-blockade with atenolol on the increased plasma active and inactive renin produced by the converting enzyme inhibitor enalapril: studies in conscious sheep. 94P

*Ham I.W., Mathias C.J., May C.N. & Stone F.A.* Intravenous morphine raises blood pressure in the conscious rabbit. 95P

*Lightman S.L. & Vallejo M.* Involvement of catecholamines in the central pressor effect of neuropeptide Y in rats. 96P

*Edwards A.V., Garrett J.R., Liao J. & Smith R.E.* Testing for possible movement of kallikrein to the blood from submandibular glands on nerve stimulation in cats. 97P

*Haylor J., Lote C.J. & Towers J.D.* PGE excretion in alkaline urine: effect of urine flow and frusemide in the rat. 98*P*

*Harris S., Haylor J. & Lote C.J.* Prostaglandin $E_2$ and $F_{2\alpha}$ excretion in acidic and alkaline urine in the rat. 99*P*

*Brodsky W.A., Durham J.H. & Matons C.* Regulation of alkali excretion in the turtle. 100*P*

*McElwain D.L.S.* The standing-gradient model applied to fluid reabsorption in the renal proximal tubule. 101*P*

*Johns E.J. & Manitius J.* A study of renal nerve regulation of calcium excretion in the rat kidney. 102*P*

*Pirie Susan C. & Potts D.J.* The effects of three transplant preservation solutions upon cell sectional area (c.s.a.) of isolated perfused proximal convoluted tubules of the rabbit kidney after rewarming to 37 °C. 103*P*

*Trenchard D.* A problem associated with apparent sensitivity of 'pulmonary' non-myelinated vagal afferent endings to increased $[H^+]$ and/or $[CO_2]$ in anaesthetized rabbits. 104*P*

*Maskrey M.* The respiratory response to almitrine and its dependence on inspired oxygen levels in conscious rabbits. 105*P*

*Johnson P.* The effects of expiratory pressure, hypoxia and hypercapnia on respiratory muscle activity in response to positive pressure inflation in lambs – Hering & Breuer reflexes revisited. 106*P*

*Adams T. & Heisey S.R.* Ventilation and sensitivity to induced hypercapnia related to convective effects of ventriculocisternal perfusion and brain blood flow in the cat. 107*P*

*Adamson T.P. & Burger R.E.* Intrapulmonary chemoreceptor responses to static $P_{CO_2}$ following acute metabolic alkalosis in the Pekin duck (*Anas platyrhynchos*). 108*P*

*Anand Ashima, Paintal A.S. & Whitteridge D.* Phosgene stimulates J receptors and produces increased respiratory drive in cats. 109*P*

*Mathew Oommen P., Sant'Ambrogio Franca B. & Sant'Ambrogio Giuseppe* Effect of cold air on laryngeal mechanoreceptors of the dog. 110*P*

*Hamilton R.D. & Winning A.J.* Reversible blockade of the pulmonary chemoreflex and airway reflexes in dogs by local anaesthetic aerosol. 111*P*

*Ponte J. & Sadler C.L.* Effects of oligomycin upon carotid body chemoreceptors of the cat and rabbit. 112*P*

*Kirby G.C. & McQueen D.S.* ICI 154,129 antagonizes [Met]enkephalin-induced depression of cat chemosensory discharge. 113*P*

*Banks D., Harris M.C. & Stokes W.N.* Carotid body chemoreceptor stimulation in rats activates large areas of the forebrain but not the hypothalamus. 114*P*

*Armstrong D.J., Kay I.S. & Russell N.J.W.* The pulmonary chemoreflexes evoked by phenyl biguanide, diguanide and guanidine in anaesthetized rabbits. 115*P*

*Mifflin S.W. & Richter D.W.* Repetitive firing properties of medullary respiratory neurones in the cat. 116*P*

*Ballantyne D., Jordan D., Spyer K.M. & Wood L.M.* Differential changes in the synaptic rhythm of caudal medullary expiratory bulbospinal neurones in response to hypothalamic stimulation in the cat. 117*P*

*Davies R.O., Kubin L. & Pack A.I.* Contralateral projections of pump neurones of the nucleus of the solitary tract in the cat. 118*P*

*Cox G.E., Dashwood M.R., Jordan D. & Spyer K.M.* An autoradiographic and ionophoretic study of muscarinic receptors in the dorsomedial medulla of the rabbit. 119*P*

*Davis P., Macefield G. & Nail B.* Activation of single laryngeal motoneurones during asphyxic gasping in the anaesthetized rabbit. 120*P*

*MacFarlane D.J.* Time constants, pure delays and gains of the respiratory responses to step changes of alveolar $P_{CO_2}$ and $P_{O_2}$ in moderate exercise in man. 121*P*

*Annastasiades E., Cross Brenda A., Guz A., Leaver Kathryn D., Murphy K., Phillips M., Semple S.J.G. & Stidwill R.P.* Continuous arterial pH measurement during exercise in patients with arteriovenous shunts. 122*P*

*West John B.* Determinants of human maximal exercise at extreme altitudes. 123*P*

*Hempel F.G.* Impairment of feline cerebral oxygenation by presumed airway closure after fluid aspiration. 124*P*

*Higenbottam T., Jones K., Fitzpatrick M. & Wallwork J.* The control of breathing following heart and lung transplantation in man. 125*P*

*Bakhle Y.S. & Grantham C.J.* Decreased adenosine uptake and metabolism in isolated lungs of rats precedes pulmonary oedema induced by α-naphthylthiourea (ANTU). 126*P*

*Barer Gwenda, Bee Denise, Emery Celia & Wach R.A.* Changed site of pulmonary vasoconstriction in chronically hypoxic rats. 127*P*

*Adams L., Guz A., Hamilton R.D., Innes J.A. & Murphy K.* Beat-by-beat changes in stroke volume during the respiratory cycle in conscious man. 128*P*

*Reid A.M. & Titchen D.A.* Reflex stimulation of parotid secretion in sheep after atropine and cervical sympathetic ganglionectomy. 129*P*

*Anderson L.C., Garrett J.R. & Thulin A.* Parotid gland function and nerves in streptozotocin-diabetic rats. 130*P*

*Asking B. & Gjörstrup P.* On regulation of amylase synthesis by nerve stimulation in the rat parotid gland. 131*P*

*Mann G.E. & Norman P.S.R.* Effects of ouabain, monesin and low potassium on neutral amino acid transport in the isolated perfused rat exocrine pancreas. 132*P*

*Kanno T., Matsumoto T., Murakami M., Seo Y. & Watari H.* Phosphorus nuclear magnetic resonance in isolated perfused rat pancreas. 133*P*

*Kanno T. & Matsumoto T.* Influence of $[Ca^{2+}]_o$ on CCK-induced secretion and redox state in perfused rat pancreas. 134*P*

*Allen A., Carroll N.J.H. & Hirst B.H.* Gastric mucus in the anaesthetized rat: response to secretin, prostaglandin, ethanol and pepsin. 135*P*

*Black J.A., Forte J.G. & Hirst B.H.* Orientation of $(H^+ + K^+)$-ATPase membrane vesicles from rabbit resting and stimulated gastric mucosa. 136*P*

*Forte J.G. & Reenstra W.W.* Potassium transport by bullfrog gastric mucosa. 137*P*

*Pappenheimer J.R. & Zich K.E.* Absorption of hydrophilic solutes from the rat small intestine. 138*P*

*Ahsan M.A. & Naftalin R.J.* Control of fluid secretion by presynaptic inhibition of acetylcholine release in the isolated rabbit intestine. 139*P*

*Calam J. & Meldrum L.A.* Lorazepam inhibits the effects of cholecystokinin octapeptide on guinea-pig ileum but not on guinea-pig gall-bladder. 140*P*

*Gray P.T.A. & Ritchie J.M.* The voltage-gated chloride conductance of rat astrocytes. 141*P*

*Ashford M.L.J.* Single chloride channel currents in cultured rat epididymal cells. 142*P*

*Keynes R.D.* A molecular model for the activation of voltage-gated ion channels. 143*P*

*De Weer Paul, Gadsby David C. & Rakowski R.F.* Voltage dependence of Na/K pump-mediated $^{22}Na$ efflux and current in squid giant axon. 144*P*

*Beadle C.A., Beadle D.J., Pichon Y. & Shimahara T.* Patch-clamp and noise analysis studies of cholinergic properties of cultured cockroach neurones. 145*P*

*Kernan R.P.* Chloride-dependent sodium influx into rat skeletal muscle fibres measured with ion-selective micro-electrodes. 146*P*

*Kelly S.S., Morgan G.P. & Smith J. W.* Calcium fluxes in skeletal muscle from dystrophic mice (129/ReJ stain). 147*P*

*MacDermott Mary & Mulryan G.* Intracellular sodium and potassium activities in normal denervated rat skeletal muscles. 148*P*

*Délèze J., Lazrak A. & Rakotonirina V.S.* Isolation of the tubular action potential in the frog skeletal muscle fibre. 149*P*

*Ferreira H.G., Ferreira Karin T.G. & Giraldez F.* Volume-induced changes in membrane potential in the stripped epithelium of the frog skin (*Rana ridibunda*). 150*P*

*Blissard D., Muallem S. & Sachs G.* Cytosolic pH regulation of the resting and stimulated isolated gastric parietal cell from the rabbit. 151*P*

*Putnam R.W. & Roos A.* Inhibition of Na/H exchange by external divalent cations in frog skeletal muscle. 152*P*

*Szatkowski M.S. & Thomas R.C.* Calculation of steady-state $pH_i$ from $pH_i$ changes caused by weak acids and bases in snail neurones. 153*P*

*Deitmer J.W. & Schlue W.R.* Measurement of intracellular pH in identified leech glial cells using double-barrelled micro-electrodes. 154*P*

*Knight D.E. & Tonge D.A.* Botulinum toxin type D blocks catecholamine secretion from isolated bovine adrenal medullary cells. 155*P*

*Baker P.F., Grafenstein H.R.K. v. & Roberts C.S.* Membrane retrieval following stimulation of exocytosis in cultured bovine adrenal medullary cells: lack of effect of extracellular Ca 156*P*

*Cull-Candy S.G., Mathie A. & Powis D.A.* Influence of the *a*-adrenoceptor agonist clonidine on single acetylcholine-receptor channels in bovine chromaffin cells. 157*P*

*Suzuki K. & Petersen O.H.* Cholecystokinin activates $K^+$-channels via internal messenger in pig pancreatic acinar cells. 158*P*

*Barinov I., Dodgson S.J., Forster R.E., Itada N. & Lin L.* Graded inhibition of intracellular carbonic anhydrase activity in human red blood cells. 159*P*

*Godt R., Good P., Maughan D., Perl D. & Tanner B.* Cytosol constituents from frog skeletal muscle determined by laser micro-probe mass analysis. 160*P*

*Dillon P.F.* Free intracellular $Mg^{2+}$ in relaxed and contracted isolated porcine carotid arteries. 161*P*

*Finchman D.A., Mason D.K. & Young J.D.* Chloride-activated sodium-dependent taurine transport in eel (*Anguilla japonica*) erythrocytes. 162*P*

*Revest P.A.* Inhibition of Na-dependent glutamate uptake into barnacle muscle by glutamate analogues and guanidinium. 163*P*

*Ehrenfeld J. & Harvey B.J.* Bicarbonate ion transport across basolateral membranes of frog skin epithelium. 164*P*

*Hodson S.A. & Wigham C.G.* Passive ion diffusion across ox corneal endothelium through the paracellular route. 165*P*

*Briggs-Dokubo S.T., Larke J.R. & Wigham C.G.* A method for the collection of human corneal-derived lactate *in vivo*. 166*P*

*Boyd C.A.R., Gibson K., Shennan D.B. & Webb K.L.* Sulphate transport by human placental microvillus brush border membrane vesicles. 167*P*

*Basset Guy, Crone Christian & Saumon Georges* The rat alveolar membrane – an epithelium performing sodium-coupled water absorption. 168*P*

*Rall J.A., Wilson M.G.A. & Woledge R.C.* Variation in tetanus force production per cross-sectional area in single fibres from frog skeletal muscle. 169*P*

*Gottschalk G. & Lüttgau H.Ch.* The effect of D600 and $Ca^{2+}$ deprivation on force kinetics in short toe muscle fibres of the frog. 170*P*

*Kaila K. & Vaughan-Jones R.D.* The effect of stimulation frequency upon intracellular pH, intracellular sodium and tension in sheep cardiac Purkinje fibres. 171*P*

*Curtin N.A.* Effect of $CO_2$ on force during isometric tetanus of isolated skeletal muscle from the frog. 172*P*

*Azhar S., Mondon C.E. & Reaven G.M.* Differential responsiveness to adrenaline by slow- and fast-twitch rat skeletal muscle with increase in age. 173*P*

*Godt R.E. & Nosek T.M.* The changes in intracellular milieu accompanying fatigue or hypoxia depress the contractile machinery of rabbit skeletal and guinea-pig cardiac muscle fibres. 174*P*

*Elzinga G. & Mast F.* Oxygen consumption following contraction of isolated rabbit papillary muscle at 20 °C. 175*P*

*Greig C., Sargeant A.J. & Vøllestad N.K.* Muscle force and fibre recruitment during dynamic exercise in man. 176*P*

*Adcock I.M., Fitzpatrick Fenella T.A. & Greenstein B.D.* Sexual dimorphism of neonatal rat brain mRNA-directed protein synthesis *in vitro*: effects of oestradiol benzoate. 177*P*

*Brooks A.N., Haynes N.B. & Lamming G.E.* Opioid peptides modulate luteinizing hormone secretion throughout the oestrous cycle in the ewe. 178*P*

*Brooks A.N., Haynes N.B., Lamming G.E. & Yang K.P.* The effects of ovarian steroids upon opioid mediated LH suppression in the ewe. 179*P*

*Fink G., Morris J.F. & Pearson J.E.* Augmented release of LH from gonadotrophs of androgen insensitive *tfm* mice. 180*P*

*Jones S.A. & Summerlee A.J.S.* Relaxin prolongs gestation and delivery time in the rat. 181*P*

*Cutting R., Fitzsimons N., Gosden R.G., Humphreys E.M., Russell J.A., Scott S. & Stirland J.A.* Evidence that morphine interrupts parturition in rats by inhibiting oxytocin secretion. 182*P*

*Eltringham L., O'Byrne K.T. & Summerlee A.J.S.* Opioids, from the adrenal glands, may mediate relaxin inhibition of oxytocin release in lactating rats. 183*P*

*Dyball R.E.J. & Leng G.* Activation of oxytocin neurones influences the periodicity of reflex milk ejection in the rat. 184*P*

*Corbett P., Ingram C.D. & Mason W.T.* Is hormone secretion independent of $Na^+$ action potentials in bovine lactotrophs? 185*P*

*Holzbauer Margarethe, Racké K. & Sharman D.F.* Electrically evoked release of 5-hydroxytryptamine (5-HT) from the neurointermediate lobe (NIL) of the isolated rat hypophysis is inhibited by concomitant dopamine (DA) release. 186*P*

*Dyer R.G. & Hollingsworth S.* The effect of fasting in female rats on the electrical activity of preoptic and anterior hypothalamic (PO/AH) neurones and their response to ventral noradrenergic tract (VNAT) stimulation. 187*P*

*Bell F.R., Davies Eleanor, Edwards C.R.W. & Williams B.C.* The relation of endogenous angiotensin and aldosterone to inhibition by captopril of salt appetite evoked in steers. 188*P*

*Al-Sendi Aneesa, Forsling Mary L., Khan M. & Peysner K.* Fluid balance in cycling rats and ovariectomized rats treated with oestradiol benzoate. 189*P*

*Cohen I.S., Datyner N.B., Gintant G.A., Johnson S.J., Mulrine N.K. & Pennefather P.* Na/K (electrogenic) pump current in isolated canine cardiac Purkinje myocytes. 190*P*

*Kimura Junko, Miyamae Shunichi & Noma Akinori* Isolation of sodium–calcium exchange current in single ventricular cells of guinea-pig. 191*P*

*Jacob R., Liu S. & Lieberman M.* Block of sodium–calcium exchange in cultured chick embryo heart cells by lanthanum and manganese. 192*P*

*Lipsius S.L. & Rubenstein D.S.* Slow inward current and intracellular calcium mediate subsidiary atrial pacemaker automaticity in the cat. 193*P*

*Fozzard H.A., Hanck D.A., Makielski J.C. & Sheets M.F.* Shift in inactivation and activation parameters of $Na^+$ current in internally dialysed canine cardiac Purkinje cells. 194*P*

*Hilgemann D. & Noble D.* Simulation of extracellular Ca transients in rabbit cardiac muscle. 195*P*

*Bahinski A., Capogrossi M.C., Houser S.R. & Lakatta E.G.* Multifocal spontaneous $Ca^{2+}$ release can trigger a spontaneous action potential in single rat cardiac myocytes. 196*P*

*Harrison S.M., Lamont Christine & Miller D.J.* Carnosine and other natural imidazoles enhance muscle Ca sensitivity and are mimicked by caffeine and AR-L 115BS. 197*P*

*Boyett M.R., Levi A.J. & Roberts A.* The decline in the response to acetylcholine (ACh) mediated by the muscarinic cholinoceptor of the rabbit sino-atrial node: a biphasic process. 198*P*

*Benham C.D. & Bolton T.B.* Modulation of transient outward currents by internal calcium in single visceral and vascular smooth muscle cells of rabbit. 199*P*

*Berlin J.R., Cannell M.B., Goldman W.F., Lederer W.J., Marban E. & Wier W.G.* Subcellular calcium inhomogeneity indicated by fura-2 develops with calcium overload in single rat heart cells. 200*P*

*Gadsby David C. & Nakao Masakazu* Dependence of Na/K pump current on intracellular [Na] in isolated cells from guinea-pig ventricle. 201*P*

*Bartschat D.K. & Blaustein M.P.* Certain 'sigma' opiate stereoisomer pairs have opposite actions on potassium (K) permeabilities in rat presynaptic nerve terminals. 202*P*

*Blakeslee B., Howard J. & Laughlin S.B.* The upper limit to photoreceptor signal-to-noise ratio in insects. 203*P*

*Baumann K.I., Hamann W. & Leung M.S.* Stimulus-response properties of SA1 mechanoreceptors (touch corpuscles) in rats at different ages. 203*P*

*Spruce A.E., Standen N.B. & Stanfield P.R.* Adenosine triphosphate-regulated potassium channels in frog skeletal muscle, investigated using single-channel recording. 203*P*

*Gallacher D.V. & Morris A.P.* Acetylcholine activation of $K^+$-channels in mouse submandibular acinar cells is largely dependent on extracellular calcium. 203*P*

*Fuller C.M. & Gallacher D.V.* Agonist-evoked rise in $[Ca^{2+}]_i$ in rat submaxillary gland: direct demonstration by Quin 2. 203*P*

*Kealey Terence* Cyclic nucleotide metabolism of human eccrine sweat gland collecting duct. 203*P*

*Chakraborty J., Jhunjhunwala J.S., Nelson L. & Sinha Hikim A.P.* Pathophysiology of human testis – mechanism of germ-cell degeneration. 203*P*

## POSTER COMMUNICATIONS

*Allen W.R., Volsen S.G. & Whyte A.* Cell–cell interactions associated with blastocyst implantation in equids. 204*P*

*Sheldrick Elizabeth L.* Actions of the uterine oxytocin receptor in the cyclic ewe. 205*P*

*Blakeley Diane M., Brown K.D., Carr J., Corps A. N. & Rees Lesley H.* Stimulation of cell growth by polypeptide growth factors in human mammary secretions. 206*P*

*Brigstock D.R., Brown K.D. & Heap R.B.* Epidermal growth factor receptors in pig extra-embryonic membrane. 207*P*

*Harrison F.A., King I.S. & Vergara Esteras Patrocinio* Somatostatin-like immunoreactivity in the alimentary tract of the sheep. 208*P*

*Harrison F.A., Hills F., Holmes P.H. & Stevenson Anne G.* The effect of anthelmintic treatment on gastrointestinal loss of plasma proteins in sheep infected with *Haemonchus contortus*. 209*P*

*Brown K.D. & Laurie M.S.* Characterization of bombesin receptors on Swiss 3T3 mouse embryo fibroblasts. 210*P*

*Fleet I.R., Fullerton F.M. & Mepham T.B.* Effects of exogenous growth hormone on mammary function in lactating Friesland ewes. 211*P*

*Bicknell R.J., Dyer R.G., Mansfield Sandra & Marsh M.I.C.* Opioid binding in the rat hypothalamus is sexually differentiated. 212*P*

*Augood S., Diez-Guerra F.J., Dyer R.G. & Emson P.C.* Evidence for opioid inhibition of noradrenaline (NA) release in the medial preoptic area (MPOA) of female rats. 213*P*

*Sirinathsinghji D.J.S.* Neurochemical indices of the contralateral circling behaviour in the rat induced by acute unilateral intranigral infusions of *N*-methyl-4-phenyl-1,2,3,6-tetrahydropyridine. 214*P*

*Bicknell R.J. & Penny Jacqueline C.* Opioids inhibit noradrenaline release in rat supraoptic nucleus and neurohypophysis. 215*P*

*Cobbett P., Mason W.T. & Poulain D.A.* Intracellular analysis of control of rat supraoptic neurone (SON) activity *in vitro* by acetylcholine (ACh). 216*P*

*Flint A.P.F., Sheldrick Elizabeth L., Theodosis Dennise T. & Wooding F.B.P.* Storage of oxytocin and neurophysin in the secretory granules of ovine large luteal cells. 217*P*

*Hamon Maureen, Heap R.B., Morgan G., Wango E. & Wooding F.B.P.* Steroid production by isolated binucleate cells from ruminant placenta. 218*P*

*Stein Janet M. & Tucker Elizabeth M.* L antigen and active potassium transport in HK and LK red cells of Barbary sheep. 219*P*

*Dauncey M.J., Greenwood C.A., Ingram D.L. & Munn E.A.* Changes in porcine muscle mitochondria induced by environmental temperature and energy intake. 220*P*

*Stitt J.T.* The effects of low ambient temperature on the febrile responses of rats to endogenous pyrogen and prostaglandin E. 221*P*

*Dupre R.K., Hartley R.S., Hicks J.W., Martinez M.J. & Wood S.C.* The effect of hypoxia on temperature regulation: a comparative study. 222*P*

*Lessler M.A. & Ray D.A.* Dietary lead inhibits avian bone fracture healing. 223*P*

*Farr L.A., Campbell-Grossman C., Mack J.M., Langenberg-Panzer S.L., Petersen M.J. & Smith T.J.* Prevention of circadian disruption following surgery using caffeine as a cue. 224*P*

*Berridge M. & Rubio R.* Inhibition by extracellular $K^+$ ($K_o$) on the rate of PI turnover in the 5-HT-stimulated blow fly salivary gland. 225*P*

*Bleakman D. & Naftalin R.J.* Modulation of acetylcholine release from isolated rabbit small intestinal submucosa by fluoride and lidamidine. 226*P*

*Porter I.D. & Whitehouse B.J.* Effect of field stimulation on the secretion of steroids by the perfused rat adrenal gland. 227*P*

*Longdon Molly, Mehta J.G., Morrissey Shelagh M. & Ward P* Effect of tripotassium dicitrate bismuthate (De-nol) on the differentiation and quantitation of mucosubstances in the guinea-pig gastric antrum. 228*P*

*Cassidy Marie M., Fitzpatrick L., Le T. & Vahouny G.V.* Characteristics of enterocyte adaptation in the jejunum and colon of weanling rats fed a variety of semi-purified dietary fibres. 229*P*

*Clark D.A., Dweck H.S. & Zeballos G.* Fluid response to osmotic agents and calcium in the isolated rabbit intestinal loop. 230*P*

*Wheeler C.P.D. & Yudilevich D.L.* Rapid uptake of adenosine at maternal and fetal sides of the perfused guinea-pig placenta: inhibition by dipyridamole. 231*P*

*Bredenberg C.E. & Nieman G.F.* The relationship between changes in lung volume and subpleural alveolar surface area, volume and number in the dog. 232*P*

*Hughes S.W., Lanigan C., Moxham J. & Ponte J.* Continuous measurement of oxygen consumption and carbon dioxide production in man. 233*P*

*Fewell J.E., Szabo J.S., Taylor B.J. & Williams B.J.* Habituation of the arousal response to upper airway obstruction in lambs. 234*P*

*Lee L.-Y. & Morton R.F.* Ventilatory responses to $CO_2$ inhaled through an isolated upper airway in conscious dogs. 235*P*

*Nattie E.E.* Intracisternal diethylpyrocarbonate (an imidazole binding agent) inhibits central ventilatory chemosensitivity in the rabbit. 236*P*

*Cohen M.I., See W.R. & Sica A.L.* Factors influencing the inspiratory–facilitatory response to lung inflation in the decerebrate cat. 237*P*

*Laitinen Annika, Laitinen L.A. & Partanen M.* Morphology of presumed afferent nerve fibres in the epithelium and in the smooth muscle layer of human respiratory tract. 238*P*

*Burke T.V., Burki N.K. & Kung M.* The effects of histamine-induced bronchoconstriction on gas exchange in mild asthmatics. 239*P*

*Cassin S., Dyer R., Gause G. & Perks A.M.* The effects of loop diuretics and ouabain on lung liquid secretion in fetal sheep and guinea-pig. 240*P*

*Clemmons D.R., Friedman M. & Vender R.L.* Pulmonary endothelial cells in culture produce a vascular smooth-muscle cell mitogen(s) in response to hypoxia. 241*P*

*Brendenberg C.E., Clark W.R., Goyette D.A., Hart A.K. & Nieman G.F.* The effect of wood smoke inhalation on canine pulmonary endothelial permeability. 242*P*

*Gropper M.A., Shepard J.M. & Staub N.C.* Arterial and venous leakage in isolated Zone I dog lung lobes give equal interstitial albumin concentrations. 243*P*

*Burn D.J., Fewell J.E. & Johnson P.* The role of the larynx in lambs with oleic acid-induced lung injury. 244*P*

*Bennett T. & Gardiner S.M.* Factors influencing the maintenance of blood pressure in salt-maintained adrenalectomized rats. 245*P*

*Atherton J.C., Bobinski H. & Solomon L.* Plasma atrial natriuretic peptide (ANP) and renal function during extracellular fluid volume expansion in man. 246*P*

*Lee M.E., Metzler C.H., Ramsay D.J. & Thrasher T.N.* Elevated left heart pressure causes increases in plasma levels of atrial natriuretic peptide (ANP) in conscious dogs. 247*P*

*Hill M. & Solomon S.* Interaction of blood volume expansion and atrial peptide in producing diuresis and natriuresis in the rat. 248*P*

*Baxter J.D., Gardner D.G., Metzler C.H., Ramsay D.J. & Thrasher T.N.* Role of atrial natriuretic peptide (ANP) in mineralocorticoid escape in the dog. 249*P*

*Courneya C.A., Ledsome J.R., Rankin A.J. & Wilson N.* Tachycardia releases immunoreactive atrial natriuretic peptide in the rabbit. 250*P*

*Klein D.M. & Raymond R.M.* Uncoupling of myocardial oxygen consumption from energy production and work during endotoxic shock in dogs. 251*P*

*Anagnostelis C., Blomquist T. & Priola D.V.* Qualitative differences in atrial and ventricular inotropic responses to cholinergic stimulation in the dog. 252*P*

*Ogilvy K.A., Randall D.C. & White G.N.* Effect of $\beta$-adrenergic blockade on shortening of 'marginally ischaemic' myocardium during classical appetitive conditioning in baboon. 253*P*

*Hart M.V., Metcalfe J. & Morton M.J.* Changes in aortic function during normal human pregnancy. 254*P*

*Ellis D. & Noireaud J.* The changes of intracellular pH during hypoxia and recovery from hypoxia in cardiac tissue from ferret and sheep. 255*P*

*Glynn I.M., Hara Y., Richards D.E. & Steinberg M.* Parallel studies of cation release and conformational change in dog kidney Na,K-ATPase. 256*P*

*Garland H.O. & Lewis A.G.* Altered renal function in chronically hyperprolactinaemic male rats. 257*P*

*Dray A. & Nunan L.* Separate supra-spinal and spinal mechanisms mediate morphine-induced inhibition of reflex urinary bladder contractions in the rat. 258*P*

*Edwards R.H.T., Gibson H. & Hayward M.* Effects of muscle length on fatiguability of the adductor pollicis in man. 259*P*

*Hall Judith M. & Morton I.K.M.* The effect of potassium channel blockers on the responses to substance P and other spasmogens in longitudinal smooth muscle from the guinea-pig ileum. 260*P*

*Kotecha N. & Neild T.O.* Relaxation of the smooth muscle of the rat tail artery associated with hyperpolarization of the smooth muscle. 261*P*

*Boyett M.R., Hart G. & Levi A.J.* Dissociation between force and intracellular Na activity ($a^{i}_{Na}$) caused by strophanthidin and bathing $K^+$ in isolated voltage-clamped sheep Purkinje fibres. 262*P*

*Cognard C., Lazdunski M. & Romey G.* Contribution of the apamin-sensitive $Ca^{2+}$-activated $K^+$ current in the 'apparent' inactivation of the $Ca^{2+}$ current in mammalian skeletal muscle. 263*P*

*Cognard C., Lazdunski M. & Romey G.* Different types of voltage-dependent calcium channels in rat skeletal muscle cells in culture: electrophysiological and pharmacological properties. 264*P*

*Allen T.J.A.* Actions of external and internal D-890 and TMB-8 on Ca channel currents in single barnacle muscle fibres. 265*P*

*Pralong W.F. & Straub R.W.* Increase in free Ca in rabbit nerve axons during electrical activity measured by quin 2. 266*P*

*Cobbett P., Ingram C.D. & Mason W.T.* Activation and inactivation of sodium and calcium currents in bovine lactotrophs. 267*P*

*Ashley C.C., Griffiths P.J. & Rakowski R.F.* Gating current in giant barnacle (*Balanus nubilus*) muscle fibres. 268*P*

*Ward K.M. & Wareham A.C.* Effects of denervation on $Na^+$ and $K^+$-activities of skeletal muscle of neonate rats. 269*P*

*Boyd R.D.H., Glazier J.D., Moore W.M.O., Sibley C.P. & Ward B.S.* Effect of chloride replacement on the electrical activity of the pig placenta *in vitro*. 270*P*

*Kuan Y.F. & Schofield C.N.* Organic Ca-channel blockers are without effects on synaptic transmission in slices of guinea-pig olfactory cortex. 271*P*

*McLennan H. & Peet M.J.* Mechanisms of amino acid-evoked excitation of rat CA1 pyramidal neurones in hippocampal slices. 272*P*

*Beadle D.J., Benson J.A., Lees G. & Newman R.* Flunitrazepam and pentobarbital modulate GABA responses of insect neuronal somata. 273*P*

*Bencherif M., Berne R.M. & Rubio R.* The release of purines by the frog sympathetic ganglion is the result of activation of postsynaptic elements. 274*P*

*Turgeon J.L. & Waring D.W.* Phorbol ester augmentation of luteinizing hormone-releasing hormone (LHRH)-induced secretion. 275*P*

*Ratner A., Rosenthal M.J. & Yelvington D.B.* Prolactin (PRL) and corticosterone (CORT) responses to footshock in sick and healthy rats. 276*P*

*Lightman S.L. & Todd K.* Vasopressin activation of polyphosphoinositide metabolism in rat anterior pituitary *in vitro*. 277*P*

*King M.R. & Rosenberg M.E.* Neurones in the superior colliculus of the gerbil responsive to the direction of movement of an auditory stimulus in open field. 278*P*

*Boulant J.A. & Dean J.B.* Local synaptic networks involved in neuronal thermosensitivity in hypothalamic tissue slices. 279*P*

*Bissonnette J.M. & Hohimer A.R.* The effect of anaemia on fetal cerebral blood flow and oxygenation. 280*P*

*Adock I.M., Fitzpatrick Fenella T.A. & Greenstein B.D.* Effects of orchidectomy on prostate gland and thymus of young adult and 18-month-old rats. 281*P*

*Sepúlveda F.V. & Smith S.M.* Use of permeabilized enterocytes to study Ca buffering by intracellular stores. 282*P*

*Publicover N.G. & Sanders K.M.* Pace-maker frequency regulates the wave forms of electrical slow waves in canine gastric antral muscles. 282*P*

*Heigenhauser G.J.F., Jones N.L., Kowalchuk J., McCartney N., Spriet L.L. & Sutton J.R.* Muscle performance and metabolism in intermittent short-term maximal exercise in man. 282*P*